exhibits both satisfactory operability and decorative characteristics and requires considerable labor and time to manufacture. However, a recent tendency to reconsider casual use of natural materials in view of the need to protect the natural environment and the demand for reduction in manufacturing cost has lead to development of liquid pressure transfer techniques for substituting a plastic steering wheel material for a wooden steering wheel material and carrying out liquid pressure transfer of a woodgrain pattern for decoration on the plastic steering wheel material.

Please replace the paragraph beginning at page 3, line 3, to line 28, with the following rewritten paragraph:

In accordance with one aspect of the present invention, a liquid pressure transfer method carries out liquid pressure transfer printing on a loop-like workpiece. The liquid pressure transfer method includes the step of supporting a transfer film on a surface of a transfer liquid while floating it thereon. The transfer film has a transfer pattern for decoration printed thereon. The liquid pressure transfer method also includes the step of downwardly immersing the workpiece in the transfer liquid to transfer the transfer pattern to a surface of the workpiece to thereby decorate the workpiece. The workpiece is immersed in the transfer liquid to be apparently cut crosswise by the surface of the transfer liquid at a transfer initiating site. Also, the workpiece is substantially concurrently contacted on a circumference of a section thereof taken substantially in a thickness direction thereof with the transfer film at the transfer initiating site. The workpiece is shifted at the transfer initiating site so as to be continuously immersed in the transfer liquid in a longitudinal direction of the workpiece while an immersion attitude of the workpiece is maintained. At least one of the workpiece and transfer film is transferred during immersion of the workpiece in the transfer liquid. Thus, a portion of the transfer film which has not yet been used for transfer printing is fed so as to surround the whole circumference of the section of the workpiece taken substantially in the thickness direction thereof, to thereby ensure transfer of the transfer pattern to the surface of the workpiece.

Please replace the paragraph beginning at page 4, line 9, to line 18, with the following rewritten paragraph:

In a preferred embodiment of the present invention, the workpiece is constituted by a steering wheel material formed to have a loop-like shape and provided on a part of a circumference thereof with a portion that does not require transfer of the transfer film thereto, designated to a transfer not-required portion. Initial immersion of the steering wheel material in the transfer liquid at the transfer initiating site is started at the transfer not-required portion. The steering wheel is immersed in the transfer liquid as it is rotated while the immersion attitude of the steering wheel material at the transfer initiating site is permitted to be maintained during the transfer of the transfer pattern.

Please replace the paragraphs beginning at page 4, line 28, to page 5, line 32, with the following rewritten paragraphs:

The method of the present invention constructed as described above, when the steering wheel is applied as the loop-like workpiece, attains liquid pressure transfer printing which permits the transfer pattern to be satisfactorily applied onto the whole circumference of the section of the steering wheel taken substantially in the thickness direction thereof without causing any distortion of the applied pattern. Also, the method of the present invention permits the joint line of the transfer pattern to be positioned on the rear surface of the steering wheel which is substantially invisible from a driver's seat when the steering wheel is mounted on a vehicle, resulting in the transfer pattern such as a straight grain pattern, a fine check pattern or the like being increased in aesthetic characteristics. Further, the present invention permits the deflection angle and immersion attitude angle to be optimally set depending on a size of each of the transfer pattern and workpiece, a configuration thereof and the like.

In accordance with another aspect of the present invention, a decorated product having a decorative pattern applied thereto is provided by subjecting a workpiece of a loop-like shape to liquid pressure transfer printing. In this printing, the workpiece is downwardly immersed in a transfer liquid, which supports a transfer film having a transfer pattern for decoration printed

thereon on a surface thereof while floating it thereon, so that the transfer pattern is applied to the workpiece. The workpiece is surrounded on a circumference of a section thereof taken substantially in a thickness direction thereof by the transfer film at a transfer initiating site. The transfer film is continuously drawn into the transfer liquid in a longitudinal direction of the workpiece at the transfer initiating site. Thus, the workpiece is substantially kept from distorting the transfer pattern in the longitudinal direction of the workpiece, resulting in transfer of the transfer pattern to the workpiece being carried out according to the above-described liquid pressure transfer method.

Thus, the decorated product of the present invention may be effectively practiced in the form of any loop-like article such as a hula hoop, rings in gymnastics, a towel ring, a chair back and the like, in addition to the steering wheel.

Please replace the paragraph beginning at page 6, line 1, to line 5, with the following rewritten paragraph:

The above and other objects and many of the attendant advantages of the present invention will be readily appreciated as the same become better understood by reference to the following detailed description when considered in connection with the accompanying drawings wherein:

Please replace the paragraph beginning at page 6, line 18, to line 19, with the following rewritten paragraph:

Fig. 3C is a view along line $3C_1$-$3C_1$, $3C_2$-$3C_2$, $3C_3$-$3C_3$ or $3C_4$-$3C_4$ as viewed in a direction of the arrows;

Please replace the paragraph beginning at page 7, line 13, to line 15, with the following rewritten paragraph:

Fig. 10 is a perspective view showing the progress of liquid pressure transfer on a workpiece from an upstream side thereof to a downstream side thereof over the lapse of time; and

Please replace the paragraph beginning at page 8, line 9, to line 31, with the following rewritten paragraph:

A workpiece such as a steering wheel or the like which forms a closed loop is generally formed to have a continuous circular shape or the like. Thus, in connection with a workpiece of a closed loop, the term "longitudinal direction of workpiece" used herein indicates a circumferential direction in which the workpiece extends. A workpiece such as a chair back or the like which forms an open loop is generally formed to have a shape which permits both ends of the loop to extend in a manner like a substantially straight line. Thus, in connection with a workpiece of an open loop, the term "longitudinal direction of workpiece" indicates a direction in which the workpiece extends from one of the ends thereof, through a loop section, to the other end. Also, a loop surface of the workpiece W is designated by reference character R. Also, the illustrated embodiment will be described essentially in connection with the case where the present invention is applied to a steering wheel as the workpiece W. Thus, when it is required to distinguish a steering wheel before the liquid pressure transfer printing of the present invention is applied thereto and that after the transfer printing is applied thereto from each other, a steering wheel which has been subjected to the liquid pressure transfer printing is designated by reference character 1 and that before the printing is designated by 1A.

Please replace the paragraphs beginning at page 9, line 18, to page 10, line 27, with the following rewritten paragraphs:

In the illustrated embodiment, the steering wheel 1A is immersed in a transfer liquid and subjected to liquid pressure transfer printing therein while being rotated. In this instance, the spoke sections 3 are arranged close to the grip portions 43, to thereby cause force which is different from that acting on other portions such as the long rim portion 41, short rim portion 42 and the like to act on a transfer film F during the transfer, resulting in that liquid pressure transfer printing like that carried out on other portions cannot be attained on the grip portions 43. Thus, for example, techniques for wrapping a suitable material such as leather or the like around the grip portions 43 may be employed after transfer printing, to thereby hide printing applied to the grip

portions 43, or apply a special decoration effect, a grip feel or the like to the grip portions 43. However, unless printing applied to the grip portions 43 adversely affects the appearance of the product or causes any problem, application of such techniques may be eliminated. Also, when it is not desired to apply liquid pressure transfer printing to the grip portions 43, they may be covered with any suitable masking material in advance. A portion such as the grip portion 43 which fails to be satisfactorily subjected to liquid pressure transfer printing in substantially the same manner as the long rim portion 41 and short rim portion 42, resulting in it being typically hidden in the subsequent step, or does not require transfer printing, is referred to as "transfer not-required portion" herein.

One of the features of the present invention is that a transfer pattern applied to the long rim portion 41 and short rim portion 42 by liquid pressure transfer printing is markedly decreased in distortion as compared with that obtained in the prior art. As shown in Fig. 4 by way of example, the transfer is carried out to substantially prevent occurrence of pattern distortion on a circumference of a section of the rim section 4 of the workpiece 1, which is taken in a thickness direction thereof perpendicular to the longitudinal direction thereof. Fig. 4 shows a check pattern formed on the long rim 41 or short rim 42 by liquid pressure transfer printing of the present invention, which is viewed in each of four directions around the circumference. As will be noted from Fig. 4, the present invention substantially prevents distortion of the transfer pattern. The transfer pattern P is so formed that a joint line Pa of the transfer pattern P is positioned on a rear surface of the steering wheel 1 which is substantially invisible from a driver's seat when the steering wheel is mounted on a vehicle.

Please replace the paragraphs at page 11, line 14, to page 13, line 21, with the following rewritten paragraphs:

The illustrated embodiment, as described above, is so constructed that the transfer film F is transferred toward the workpiece W or steering wheel 1A. However, the illustrated embodiment is not limited to such construction. For example, the steering wheel 1A may be transferred toward the transfer film F kept stationary on the surface of the transfer liquid L in the

transfer bath 11. Alternatively, both steering wheel 1A and transfer film F may be moved together. In the illustrated embodiment, it is merely required that both approach each other. The term "relative movement direction" defined herein in connection with a direction of movement or transfer of the transfer film F covers all of the above-described transfer manners. Further, the term "upstream side in the relative movement direction" defined herein indicates a side on which a transfer film F which has not yet been used for transfer printing is fed with respect to the workpiece W. Thus, it is substantially opposite to a side on which the joint line Pa is formed.

The transfer film feed unit 12 includes a film roll 18 formed by winding the water-soluble transfer film F in a roll-like manner and a solvent tank 19, in which an activator S for providing a dry transfer ink printed on a carrier sheet with stickiness to render it transferable, is stored. Such a treatment with the activator S is referred to as "activation" herein. The transfer film feed unit 12 also includes feed rollers 20. Such construction permits the transfer film F delivered from the film roll 18 to be activated by the activator S in the solvent tank 19 and then continuously fed to the transfer bath 11. The activator S is made by mixing a resin material, a pigment, a solvent, a plasticizer and the like with each other at a suitable ratio by way of example. Simply, a solvent such as a thinner or the like may be used for this purpose.

The workpiece holding and shifting unit 13 is constructed so as to immerse the steering wheel 1A in the transfer liquid L while holding it thereon and then rotate the steering wheel 1A to shift it in the longitudinal direction of the steering wheel 1A or workpiece W. Immersion of the workpiece W or steering wheel 1A in the transfer liquid L by the workpiece holding and shifting unit 13 is carried out so that a deflection angle α defined between the loop surface R of the steering wheel 1A and the relative movement direction of the transfer film F may be suitably set to be within a range of $\pm 90°$ on the basis of the relative movement direction as shown in Fig. 5A. Alternatively, an immersion attitude angle β of the loop surface R relative to the surface of the transfer liquid L may be suitably set to be within a range of ± 80 on the basis of an upright position of the workpiece as shown in Figs. 6A and 6B. In this connection, the symbols "+" and "-" referred to in connection with the deflection angle or immersion attitude angle herein do not have any specific definition. Thus, they merely mean that when any one of rotational directions of

the workpiece from a certain reference position is indicated by "+", the other rotational direction is indicated by "-".

In each of Figs. 5A and 5B, the steering wheel 1A is immersed in the transfer liquid L while being kept substantially erect or upright with respect to the surface of the transfer liquid L, or keeping the immersion attitude angle β at substantially 90 degrees, wherein the deflection angle α is set to be about 65 degrees in Fig. 5A and about 90 degrees in Fig. 5B. Also, in Figs. 6A and 6B, the immersion attitude angle β is set to be about 50 degrees, and therefore the workpiece W or steering wheel 1A is immersed in the liquid while being inclined at an angle of about 40 degrees on the basis of an upright position thereof. Thus, a normal direction N of the loop surface R as viewed in plan is substantially conformed to the relative movement direction of the transfer film F, resulting in the deflection angle α being about 90 degrees. Further, in Figs. 7A and 7B, the immersion attitude angle β is set to be about 55 degrees, resulting in the steering wheel 1A being inclined at an angle of about 35 degrees on the basis of an erect position thereof. Thus, the normal direction N of the loop surface R as viewed in plan is rendered substantially perpendicular to the relative movement direction of the transfer film F, resulting in the deflection angle α being about 0 degree.

In Fig. 1, the steering wheel 1A is shown as if it is vertically downwardly immersed in the transfer liquid. Alternatively, the steering wheel 1A may be obliquely lowered by means of a conveyor of an inverted triangular shape, an articulated robot or the like. Also, in Fig. 1, the transfer film F is fed to the transfer bath 11 after it is coated with the activator S. Alternatively, the transfer film F may be fed to the transfer bath 11 and then have a solvent or the like applied thereto for activation thereof. Further, in Fig. 1, the film F is continuously fed to the transfer bath 11 in which the transfer liquid L is circulated. Alternatively, individual transfer films F may be manually fed one by one to the transfer bath 11 in which the transfer liquid L is kept stationary so that they may be floated on the transfer liquid L.

Please replace the paragraph beginning at page 14, line 19, to page 15, line 6, with the following rewritten paragraph:

The workpiece W or steering wheel 1A is initially immersed in the transfer liquid while being so set that a front surface thereof defined at the time when it is mounted on a vehicle, is kept facing the transfer film F relatively approaching the steering wheel. At this time, immersion of the steering wheel 1A in the transfer liquid L is carried out while keeping the deflection angle and immersion attitude angle suitably set depending on conditions such as the size of the transfer pattern, the size of the steering wheel, the thickness of the steering wheel and the like. The initial immersion is started at the transfer not-required portion such as the grip portions 43 or the like. At this time, when undesired transfer is possibly carried out on parts of the long rim portions 41 and short rim portions 42 close to the transfer not-required portion, the parts may be covered with a masking material or the like to prevent the undesired transfer. During the immersion, the steering wheel 1A, as shown in Figs. 3A and 3B by way of example, has the rim section 4 apparently cut crosswise by the surface of the transfer liquid L. In other words, the rim section 4 has a whole circumference of a section thereof which is taken substantially in a thickness direction thereof substantially concurrently contacted with the transfer film F.

Please replace the paragraph beginning at page 15, line 8, to line 34, with the following rewritten paragraph:

After initial immersion of the steering wheel 1A, the workpiece holding and shifting unit 13 rotates the steering wheel 1A at a low speed to continuously immerse the steering wheel A in the transfer liquid L in the longitudinal direction thereof, resulting in the steering wheel gradually being subjected to liquid pressure transfer printing. Immersion of the steering wheel 1A in the transfer liquid L is carried out at two sites thereof. In this connection, the liquid pressure transfer printing is carried out at one of the immersion sites or a site of the steering wheel which is immersed in the surface of the transfer liquid L on the upstream side in the relative movement direction of the transfer film F or at a site thereof which is initially contacted with the transfer film F. The site is referred to as a transfer initiating site Z herein. At the transfer initiating site Z, the

transfer film F is gradually downwardly drawn into the transfer liquid with rotation of the steering wheel 1A to generate a liquid pressure, which acts to subject the steering wheel to liquid pressure transfer printing. At the other of the two immersion sites, the rim section 4 is gradually drawn out of the surface of the transfer liquid L, to thereby fail to generate the liquid pressure, resulting in the steering wheel being kept from printing. At the transfer initiating site Z, it is required to constantly replenish a circumference of the rim section 4 with a portion of the transfer film F which has not yet been used for transfer printing, so that a relative transfer speed of the transfer film F and a rotational speed of the steering wheel 1A are set to be substantially equal to each other.

a11 cont'd

Please replace the paragraph beginning at page 16, line 3, to line 13, with the following rewritten paragraph:

Progress of the liquid pressure transfer printing and formation of the joint line will be now described. As described above, in the present invention, it is carried out to constantly feed a portion of the transfer film F which has not yet been used for transfer printing to the circumference of the section of the rim section 4 defined in the thickness direction thereof, to thereby remarkably restrain distortion of the transfer pattern as compared with the prior art. As shown in Fig. 4 by way of example, the rim section 4 substantially escapes from distortion of the transfer pattern applied thereto as viewed in all directions around the circumference of the rim section 4.

a12

Please replace the paragraph beginning at page 16, line 33, to page 17, line 6, with the following rewritten paragraph:

The steering wheel 1A having the transfer pattern P thus printed thereon provides a decorated product of the present invention. However, when it is desired that a portion of the steering wheel which has been subjected to the liquid pressure transfer printing exhibits increased gloss and depth, it is coated with a transparent topcoat by spraying or the like. The topcoat thus formed may be subjected to polishing by buffing or the like.

a13

Please replace the paragraph beginning at page 18, line 1, to line 17, with the following rewritten paragraph:

Satisfactory liquid pressure transfer will now be described. For example, when such a fine check pattern as seen in a fabric made of a carbon fiber (hereinafter referred to as "carbon pattern") is to be transferred to a surface of the steering wheel 1A, it is very difficult to carry out the transfer so as to conform longitudinal lines of the check pattern and lateral lines thereof to a circumferential direction of the rim section 4 and a direction of the section thereof defined in the thickness direction thereof. However, formation of the check pattern in a manner to substantially conform the carbon pattern to the thickness direction of the workpiece W is desirable because it permits the steering wheel 1 to exhibit an appearance increased in aesthetic characteristics. Thus, such liquid pressure transfer as shown in Fig. 9 which reduces misregistration Pv in the transfer pattern P in the circumferential direction of the rim section 4 is considered to be satisfactory.

a14

Please replace the paragraph beginning at page 19, line 17, to page 20, line 13, with the following rewritten paragraph:

It is considered that this is due to the fact that transfer of the pattern to the whole circumference of the workpiece W apparently cut crosswise by the surface of the transfer liquid L due to immersion thereof in the transfer liquid starts on the upstream side to which the transfer film F is fed and then continuously progresses to the sides of workpiece W with the progress of lapping of the transfer film F on the workpiece, followed by lapping of the transfer film F on the lower side of the workpiece W, resulting in the joint line Pa being formed on the lower side. Thus, transfer of the transfer pattern P to the workpiece W is not substantially concurrently carried out over the whole circumference of the workpiece W apparently cut crosswise continuously progresses from the upstream side to the downstream side with a certain time difference. Thus, it is considered that transfer of the transfer film F to the workpiece W while keeping it lying on the transfer liquid permits a locus of lapping of the transfer film F on the workpiece W to substantially coincide with the circumference of the section of the workpiece W taken in the thickness direction thereof, to thereby minimize shifting or misregistration of the

a15

pattern in the circumferential direction of the rim section 4. This means that the immersion attitude angle and a feed rate of each of the transfer film F and workpiece W are set so as to permit the locus of the lapping of the transfer film on the workpiece W to substantially coincide with the circumference of the section of the workpiece in the thickness direction thereof. In Fig. 10, by way of example, a line substantially normal to a direction of movement of the transfer film F, which is designated by F1, is defined so as to substantially conform to the circumference of the section of the workpiece W in the thickness direction thereof which is indicated by two-dot chain lines Pt.

Please replace the paragraph beginning at page 20, line 15, to page 21, line 5, with the following rewritten paragraph:

Before discussing effects of the deflection angle, elongation or enlargement of the transfer pattern will be considered. In immersion of the workpiece W or steering wheel 1A in the transfer liquid, the outer peripheral side of the steering wheel 1A is increased in immersion speed as compared with the inner peripheral side thereof because the former has a diameter larger than the latter. Thus, it is considered that the pattern is apt to elongate or enlarge on the outer peripheral side as compared with the inner peripheral side. Also, it is considered that the pattern tends to elongate on the downstream side of the steering wheel 1A as compared with the upstream side thereof, because of lapping of the transfer film F on the steering wheel on the downstream side (see Fig. 10). As described above, in the illustrated embodiment, the normal direction N of the loop surface R as viewed in plan is set to be inclined by an angle of 10 to 20 degrees with the relative movement direction of the transfer film F or the deflection angle is set to be 70 to 80 degrees. Such arrangement permits the outer peripheral side of the workpiece W on which elongation of the pattern easily occurs to be positioned on the upstream side, on which the pattern elongation is hard to occur and the inner peripheral side of the workpiece W on which the pattern elongation is hard to occur to be positioned on the downstream side which causes the pattern elongation to be readily occur, resulting in such factors contrary to each other being offset by each other.